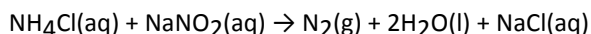


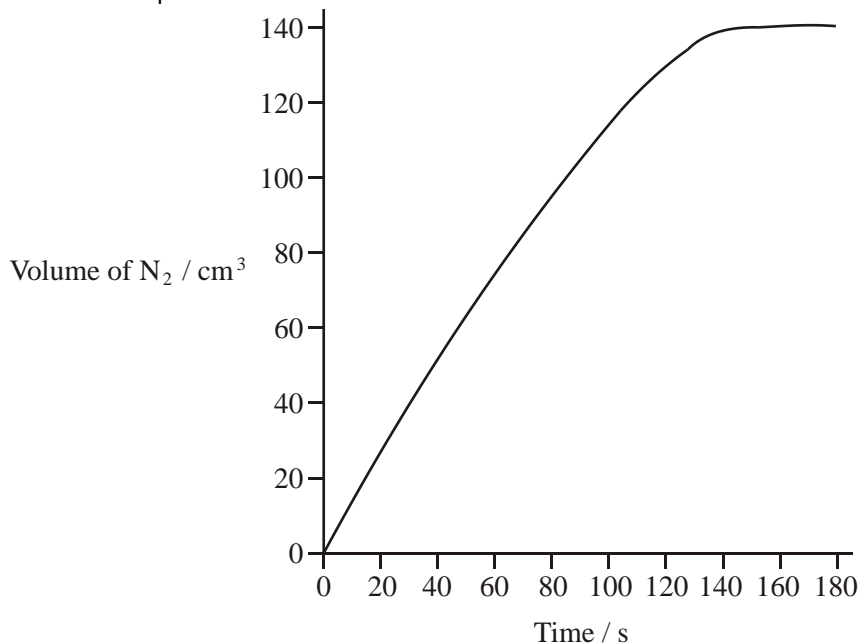
## T06D03 – 6.2a HW

Name.....

1. The reaction between ammonium chloride and sodium nitrite in aqueous solution can be represented by the following equation.



The graph below shows the volume of nitrogen gas produced at 30 second intervals from a mixture of ammonium chloride and sodium nitrite in aqueous solution at 20°C.



- (a) (i) State how the rate of formation of nitrogen changes with time. Explain your answer in terms of collision theory.

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(2)

- (ii) Explain why the volume eventually remains constant.

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(1)

- (b) (i) State how the rate of formation of nitrogen would change if the temperature were increased from 20°C to 40°C.

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(1)

- (ii) State **two** reasons for the change described in (b)(i) and explain which of the two is more important in causing the change.

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(3)

- (iii) The reaction between **solid** ammonium chloride and aqueous sodium nitrite can be represented by the following equation.



State and explain how the rate of formation of nitrogen would change if the same amount of ammonium chloride was used as large lumps instead of as a fine powder.

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(2)

(Total 9 marks)

2. (a) Identify **two** features of colliding molecules that react together in the gas phase.

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(2)

- (b) For many reactions, the rate approximately doubles for a 10°C rise in temperature. State **two** reasons for this increase and identify which of the two is the more important.

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(3)

(Total 5 marks)